

### **REMARKS**

Claims 11-15, 25-29, 32 and 34-39 are pending, wherein claims 11, 12, 15 and 32 have been amended and new claims 34-39 were added. Reconsideration and allowance for the above-identified application are now respectfully requested in view of the foregoing amendments and the following remarks.

The Office Action indicates that claims 25-29 and 32 are allowed. As claim 32 is a method claim that was dependent on claim 11, it has been rewritten in independent form so that it does not incorporate the limitations currently added to claim 11. Claim 32 is still allowable as it recites the exact same limitations as before being rewritten in independent form.

The Office Action rejects claims 11-15 under 35 U.S.C. § 103(a) as being unpatentable over Rubin (US 6,482,009) in view of Nakamura et al. (US 4,359,455). In making this rejection the Office Action acknowledges that Rubin fails to teach or suggest every limitation of claims 11-15, including a pH changing material used to enhance a color change by the pH sensitive color changing indicator when the endodontic cone is moistened with water. For this reason, the Office Action seeks to combine Rubin with Nakamura, which allegedly discloses the use of a pH changing material to enhance a pH sensitive color change involving dental caries. In fact, Nakamura utilizes a pH indicator composition that includes a buffered mixture of base and acid to maintain the pH of the indicator composition around a neutral pH of 6.5 to 7.0, preferably 6.7 to 7.0. Col. 2, lines 43-46; col. 5, lines 9-11, 47-48. Because the buffered base/acid mixture maintains the pH around neutral pH (*i.e.*, preferably 6.7 to 7.0) the buffered base/acid mixture of Nakamura would not function to significantly enhance the color change of a pH indicator beyond that which would occur using plain water (*i.e.*, moisture found in a root canal).

Water is essentially neutral and ordinarily has a pH at or around 7. Neutral pH centers around 7 but may include slight deviations below and above 7. Thus, the buffered base/acid mixture of Nakamura does not substantially differ from the normal pH of plain water. It certainly does not change to a basic pH, as the highest pH disclosed in Nakamura of the base/acid buffered composition is 7.0, which is exactly neutral pH. Basic pH is higher than 7.0 and can range as high as 14 for strong bases. Moderately strong to strong acidic materials such as mineral acids and some organic acids such as citric acid, reduce the pH to substantially below 6.5 (*i.e.*, below 4, typically below 3, and often below 2). Thus, the buffered base/acid mixture of Nakamura creates a composition that is only very slightly acidic (*i.e.*, 6.5 to 7.0) but essentially neutral like water.

Besides being essentially a neutral pH system, the buffered base/acid mixture of Nakamura is premixed and therefore pre-reacted with the pH indicator. No attempt is made in Nakamura to prevent the reaction of the buffered base/acid system and pH indicator prior to testing for dental caries. Col. 2, lines 43-48; col. 3, lines 16-25; col. 5, lines 6-11. Therefore, in order to further distinguish over the combination of Rubin and Nakamura, claim 11 was amended to specify that the pH sensitive color changing indicator is "applied to the water absorptive material so as to not initially react with the pH changing material". In that way, the pH changing material will not cause the pH sensitive color changing indicator to prematurely change color before it is used to test for the existence of moisture in a root canal. Support for this limitation is shown in claim 25, wherein care is taken to first dry the cone after applying the pH changing material, followed by applying an anhydrous pH sensitive indicator solution to keep the materials from prematurely reacting in water before detecting for moisture in a root canal. Claim 11 therefore distinguishes over the combination of Rubin and Nakamura, which neither teach nor suggest an endodontic device for detecting moisture within a root canal comprising an endodontic cone formed of a water absorptive material, a pH changing material applied to the water absorptive material, and a pH sensitive color changing indicator applied to the water absorptive material so as to not initially react with the pH changing material.

Claim 11 was further amended to specify that "the pH changing material causes water contacting the endodontic cone to either become substantially more basic than neutral or substantially more acidic than neutral so as to enhance a change in color of the endodontic device when the endodontic cone is moistened with water". Support for this limitation is found in paragraph [0026] of the application. In contrast, the buffered base/acid mixture used in Nakamura is essentially neutral pH (*i.e.*, 6.5-7.0) not "substantially more basic than neutral or substantially more acidic than neutral". For this additional reason, claim 11 is patentable over the combination of Rubin and Nakamura.

New claim 36 claims the embodiment in which the pH changing material consists of at least one base applied to the water absorptive material, thus excluding acids, which would only serve to neutralize the base. Nakamura neither teaches nor suggest the use of a pH changing material "consisting of at least one base" but rather a buffered base/acid combination. Col. 2, lines 43-46; col. 5, lines 9-11, 35-48. Moreover, claim 36 specifies that "the base causes moisture contacting the endodontic cone to become significantly more basic than neutral in order to enhance a change in color of the endodontic device when the endodontic cone is moistened

with water". In contrast, the highest pH of the base/acid mixture of Nakamura is 7.0, which is exactly neutral, not basic. For either of the foregoing reasons, the combination of Rubin and Nakamura fails to teach or suggest every limitation of new claim 36.

New claim 38 alternatively claims a device in which the pH changing material "consist[s] of at least one acid applied to the water absorptive material". Nakamura neither teaches nor suggest the use of a pH changing material "consisting of at least one acid" but a buffered base/acid combination. Col. 2, lines 43-46; col. 5, lines 9-11, 35-48. Moreover, new claim 38 also specifies that "the acid causes moisture contacting the endodontic cone to become substantially more acidic than neutral in order to enhance a change in color of the endodontic device". In contrast, the lowest pH of the base/acid mixture of Nakamura is 6.5, which is essentially neutral, not "substantially more acidic than neutral". For either of the foregoing reasons, the combination of Rubin and Nakamura fails to teach or suggest every limitation of new claim 38.

In the event the Examiner finds any remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview or which may be overcome by examiner amendment, the Examiner is requested to contact the undersigned attorney.

Dated this 27<sup>th</sup> day of April 2007.

Respectfully submitted,



JOHN M. GYNN  
Registration No. 36,153  
WORKMAN NYDEGGER  
Attorney for Applicants  
Customer No. 022913